

STAAKEN Z21 FLITZER AND Z21-A FLITZER

Issue 4 Warning added about VW propeller hub fit dated 8.1.07

1. UK contact

Mr Lynn Williams, Brynsiriol, 45A Tramway, Hirwaun, Mid Glam CF44 9PA
Tel: 01685 814319

2. Description

The Flitzer is a small single seat all-wood biplane, with fabric covered flying surfaces. It is available in the form of a set of drawings for amateur construction. The Z-21A is a wide-fuselage version of the Z-21, for increased cockpit space. The VW 1834cc engine is standard, the dual-ignition Aerovee engine of 2180cc is also approved. Despite their small size and light weight, both Z-21 and Z-21A versions are SEP Aeroplanes, not microlights.

An alternative rounded shape fin and rudder design has been cleared on a one-off basis on G-ERIW, similar to Z-1S fin and rudder. LAA mod 10914 refers. However the designer recommends that for any future rounded fin example, a standard rounded Z-1S rudder and a 2" taller fin is used of larger area for improved directional control. This modification has yet to be submitted however.

3. Fast Build Kit 51% Compliance

Not applicable to plans built aircraft.

4. Build Manual

Nil. Drawing list as follows provides all required information.

Z100	Z200
Z101	Z201
Z102	Z202
Z102a	Z203
Z103	Z204
Z104	Z205
Z105	Z206
Z106	Z207
Z107	Z208
Z108	Z209
Z109	Z210
Z110	Z300
	Z301
	Z302
	Z303
	Z400
	Z401
	Z402
	Z500
	Z501

STAAKEN Z21 FLITZER AND Z21-A FLITZER5. Build Inspections

Build inspection schedule 1B (wooden biplane aircraft).
Inspector approval codes A-A or A-W. Inspector signing off final inspection also requires 'first flight' endorsement

6. Maintenance Manual

Nil. In the absence of a manufacturer's schedule, recommend using LAMS schedule.

7. Flight Manual

Nil. Refer to 'Flitzer Ground Handling, Flying & Operating, Do's and Don'ts' by Lynn Williams

8. Mandatory Permit Directives

None applicable specifically to this aircraft type, but note

MPD: 1998-019-R1 Flexible Fuel Tubing Applies to all aircraft

9. LAA Mandatory Modifications

LAA safety information dated 10.7.01 describes correct interpretation of drawings for the installation of the shoulder harness attachment cable and construction of the welded engine mount.

73.5" span tailplane (as shown on very early Flitzer drawing Z300 dated 27.10.96) is not accepted option. Correct tailplane span is 69" per drawing Z300 dated 21.6.97.

10. Service Bulletins

Nil

11. Standard Options

Z-21A model (wide fuselage)

12. Special Inspection Points

- With VW engine, design of conversion to be agreed with LAA Engineering as there is no standard design of VW 1834cc conversion. Dual ignition system (of an accepted type) required. LAA VW Engine Build checklist to be completed during build up of engine to record critical measurements. Refer to SPARS section on VW engines. Oil cooler will almost certainly be required, and careful ducting to achieve adequate cylinder cooling. Compression ratio must be set up (usually no more than 8.0:1) using choice of cylinder base shims. Failing to use base shims usually results in excessively high compression ratio and consequent excessively short engine life.

STAAKEN Z21 FLITZER AND Z21-A FLITZER

- With VW conversion, if gravity feed is used, check gravity flow from downstream side of carburettor float valve (by removing float chamber bowl or float chamber drain plug) rather than at carburettor fuel inlet. If an automotive carburettor (e.g. Stromberg CD150) is used with gravity feed, the carburettor float valve is often found to provide inadequate or very marginal flow. This is because automotive carburettors are set up for use with a pump-fed installation not gravity feed. The fuel pressure from a pump allows a carb float jet of only about 1.5 mm diameter to be used, this restricts the flow too much with the much lesser fuel pressure in a typical gravity fed system. This is a common cause of lean running and engine failure. This is cured by fitting a larger diameter jet to the float valve, (typically 2.5 to 3mm diameter) or carefully opening up the existing jet and lapping it in with a household brass polish.
- With VW engine, quality of fit of propeller hub on crankshaft nose is critical to security of propeller mounting in flight.
- When engine mount is made, ensure that centrelines of tubular mount members intersect with firewall mounting bushes at firewall face, to minimise offsets and bending moments in the joint. LAA note dated 10.7.01 refers.
- When shoulder harness attachment cross-cable is made, ensure that the cable is long enough for harness to act on a 90 degree or less 'vee' of cable rather than an almost taught cable, otherwise the cable tension loads are unduly magnified and the cable would be more likely to pull out of its attachments, or break in a crash. LAA note dated 10.7.01 refers.
- Ensure that control column grip is securely bolted or riveted to control column. A push fit is not acceptable.

13. Operating Limitations and Placards

Maximum number of occupants authorised to be carried: One

The aircraft must be operated in compliance with the following operating limitations, which shall be displayed in the cockpit by means of placards or instrument markings:

Aerobatic Limitations

Intentional spinning is prohibited

Aerobatic manoeuvres are prohibited

Loading Limitations

Maximum Total weight Authorised: 750 Lbs

CG Range: 12.0 inches to 14.6 inches aft of datum.

Datum Point is: Leading edge of upper wing

Engine Limitations

Maximum Engine RPM: 3300

Airspeed Limitations

Maximum Indicated Airspeed: 120 mph

Other Limitations

The aircraft shall be flown by day and under Visual Flight Rules only.

Smoking in the aircraft is prohibited.

STAAKEN Z21 FLITZER AND Z21-A FLITZER

Additional Placard

"Occupant Warning - This Aircraft has not been Certificated to an International Requirement"

Fireproof identification plate must be fitted to fuselage, engraved or stamped with aircraft's registration letters.

14. Additional Engine Limitations/Placards

With VW: Max CHT: 225C Max
 EGT: 800C Max
 Oil temp: 90C Max
 Oil pressure Min 2.5 Kg/sq cm @3000 RPM

15. Maximum Permitted Empty Weight

Fuel tank contents may vary slightly between examples so it is not possible to define a universal maximum empty weight. With full fuel tank, aircraft must be able to carry a pilot weighing 170 Lbs without exceeding max gross weight of 750 Lbs. Hence max weight of aircraft with full fuel tank is 580 Lbs.

16. Special Test Flying Issues

Satisfactory engine cooling
 Freedom from exhaust smoke in the cockpit

17. Control Surface Deflections

Ailerons	Up:	22-25 degrees
	Down:	22-25 degrees
Elevators	Up:	30-34 degrees
	Down:	20-23 degrees
Rudder	Left	30-33 degrees
	Right	30-33 degrees

18. Significant Airworthiness Approval Notes

LAA-223-380	Z-1	VW 1834 engine, prototype
LAA-223-380 Sup 1	Z-21A	VW 1834 engine, standard fin and rudder
LAA-223-380	Sup 2	Z-21 VW 1834 engine, standard fin and rudder
LAA-223-380 Sup 3	Z-21	Aerovee engine and rounded fin and rudder

Approved:

F.R. Donaldson
 Chief Engineer

----- END -----